

OPPORTUNITIES FOR FOREST RESEARCH IN OHIO\*

by

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In discussing the opportunities for forest research in Ohio, it seems essential that several factors should be carefully evaluated before setting out to plot a course of future action.

While there is always a rightful and sound premise in the conduct of pure research, it appears that an effective program of applied research must also be aggressively undertaken to enhance public interest and support in this field of endeavor.

It is to be remembered that any program which is dependent on continuing support from public funds must meet three basic requirements:

First, its benefits must be sufficiently broad to be of value to a substantial segment of population.

Second, the program must be attuned to valid changes in the broad economy.

Third, the costs must be commensurate with the benefits to be derived.

Those three points must be the tripod of its stability as a continuing program.

At the outset let us determine what our basic problems are in regard to our forest research program. To me, the matter boils down to four points which are to be resolved:

- (1) What do we now have?
- (2) How can we best use what we now have?
- (3) What do we want for the future?
- (4) How can we best develop new types of timber crops to meet the requirements of changing markets?

It is regrettable that the answers to these four basic questions do not fully lend themselves to as easy an arrangement for solution, or that they might be undertaken one at a time in a predetermined schedule. Actually, from the outset there will be overlapping, both as to substantive objectives and from the time factor as well.

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Let us revert to the first question, "What do we now have?" Substantial work has been done over the past two decades in arriving at a forest inventory in Ohio. The number of acres in timber; forest types incident to the several well recognized areas in the State in which the soil and topography are the governing factors; the composition of existing stands on the basis of growth stage, and other related factors.

The picture, at least as far as mature timber is concerned, is not too bright. Outside of over-mature, grazed-out farm woods in the better agricultural sections, by far the greatest portion of our timber crop is in immature stock of pole and post sizes.

That, in itself, is not too serious if the matter is considered from the factor of volume alone. But what such figures do not adequately convey to the average citizen is the marked deterioration of the composition of species involved. Low value species such as scarlet oak, sassafras and scrub pine, have often replaced the better hardwoods.

For decade after decade we have gone on with the senseless pattern of "high grading" our woods, cutting the best of each succeeding crop, leaving only the culls and inferior species to provide the regeneration of tomorrow's woodlands. This practice is comparable to sending our best breeding stock to the packing house and leaving the culls to reproduce our herds; or feeding our best seed grain, and planting the sweepings from the barn floor. How long could our agricultural economy stand up under such practices? Yet that is exactly what we have been doing in managing our forest resources.

As a result, we are faced today with the providing of a sound and ingenious answer to our second basic question, "How can we best use what we now have?"

To me, the answer to that question must be solved through applied research in the field of wood utilization. I believe that foresters who are familiar with existing conditions of stand composition would agree with me that three or four decades will elapse, even under good management practices, before the bulk of inferior species now present, can be harvested and used, making way for production of more valuable species where they now exist in earlier growth stage.

In present stands with a high percentage of less valuable species, the lack of good competitive growth conditions has resulted in poor conformation for saw timber purposes. As a result long, cleaned, straight-boled logs are relatively scarce, and any use of existing timber crops must contemplate a substantial amount of short length material.

The obvious answer to such use is new techniques and new markets for laminated material, readily usable by the end purchaser, if volume is to be achieved. This would include structural members, sectional flooring, built-up units of interior panelling, etc., all built to a standard construction code dimension. While the durability of hardwoods is widely recognized, the factor of high labor cost in "custom built" uses, lends added incentive to developing pre-fabricated, easily installed units.

This same factor of high labor cost for custom use of hardwoods, poses an interesting question in my mind. Is it possible that a low-cost chemical treatment of hardwoods could be developed which would alter density or grain characteristics to the point that they could be competitive with our fast diminishing softwoods for structural uses? If that could be achieved, it would offer a vast new market for hardwoods in which the transportation factor might conceivably offset the cost of

such treatment. If such treatment for the hardwoods could reduce weight, provide resistance to flame, and preserve against decay and insects, their increased use could be fully predicted.

Another facet of possible use for our existing low-grade hardwoods is to develop greater use for wood wastes. Agricultural research has already indicated their value for mulch. Combined with proper amounts of fertilizing elements, is it possible that we could develop a new product for "back yard" gardeners or specialized agricultural uses? --- How about developing a container for the floral or nursery business, pressed from fertilized wood waste, which could be set directly in the soil and left to slowly disintegrate as the plant grows?

Perhaps these particular suggestions are impractical or of little consequence. But they do point up the fact that there is vital place in this whole picture for new and imaginative ideas.

In our evaluation of this whole subject today, let us "lay on the shelf" the term, "research problems" and, instead, employ the term "research opportunities". The importance of this point of view cannot be over emphasized.

Forty or fifty years ago good hickory commanded a valuable market in the bent wood industry. People with imagination developed the automobile, the pneumatic tire, and then the steel wheel. Today, but little demand exists for hickory, and few mills will even buy hickory logs. Our job now is to find new uses for hickory, not to lament the passing of the horse and buggy age. Beyond a doubt, part of the transition in the composition of our present timber stands is directly traceable to changing market conditions for various species. The cracker barrel and the butter tub belong to a past age, but imagination and applied research can create new uses for the wood which was their parent material.

I am not too greatly concerned with extended research in marketing of forest products. Under our competitive free enterprise system, when a demand exists for a certain product or material, marketing procedures are usually quickly and efficiently developed. To develop specific marketing procedures before a virile market exists reflects another facet of the philosophy which disregards the basic law of supply and demand.

Enough for the past and present.

Let us turn to the third question, "What do we want for the future?"

Here in Ohio the vast percentage of our timberland is in private ownership and is most likely to remain so. If the average landowner is to be seriously interested in forest management, it is because he sees tangible, substantial fiscal returns during his own lifetime. If such income is of a recurrent character, he will be all the more constructively concerned.

The obvious answer is to develop a quicker cycle of timber harvest. The denser hardwoods are of admittedly slow growth. The urge for quicker cash returns is today reflected in the cutting of undersized sawlogs, the virtual clear cutting of existing stands for railroad ties, posts, mine props, or pulpwood. All too frequently this occurs at a period when choice young trees are just approaching a period of maximum growth rate. The net result is low income, and a second crop so long deferred that the owner loses interest in good management because the dollar incentive is lacking.

I do not personally believe that we must wring our hands or weep on each other's shoulder, and conclude that we must endure an undesirable situation.

On the contrary, I believe we have not yet even begun to recognize the potential productiveness of our woodland. In the matter of learning how to grow a greater volume of usable wood in less time, we are a century behind almost every other phase of agricultural research. Even in the past era of open pollinated corn, the average farmer would walk the rows of his corn field at the ripening period, study the full ear of corn and the characteristics of the stalk upon which it grew, in order to select the seed for his next crop. True, we know now that this could be no conclusive guarantee of the crop to follow; but in the source of our tree seed for future crops, even the conformation of the parent tree has been little regarded.

Still using corn as a factor for comparison, look at the wonderful work which has been done by hybridization. Increased yields, desirable growth traits, adaptability to certain sites and soils, adjustment to length of season - these and other benefits have been developed through applied research.

The development of fast growing hybrids in the softer hardwoods in this latitude could make a great contribution to the stability of the wood conversion industries of this area. More and more the pulp and paper industry has spread into the South because of shorter cycle tree crops. To lose the investment in these processing plants and the employment they create, would be a serious economic loss, many times greater than the cost of developing improved types and volume of their basic raw material.

Granting that the period of comparable research in tree species is in its very nature a longer term program, is there less reason that comparable improvements cannot be developed? What little has thus far been done with the tree hybrids has opened the door to a new frontier. Certainly there will be countless failures and disappointments, but a few right answers turned up can have a profound effect on our total future economy.

Take the matter of direct fertilization of timber trees - despite the marvelous results achieved in this field of applied research for grain and forage production, we know virtually nothing along this line in regard to timber trees. Almost by accident, I have observed the almost phenomenal growth of black walnut in response to the application of a small amount of nitrogen. I do not know whether my thinking is on sound ground, but I am intrigued by the notion, that once applied to a walnut tree the nitrogen factor might be of rather long duration and benefit, for even though in the process of assimilation the nitrogen might end up in the leaf, when the leaf drops it is likely to be in the area above the feeder roots, and the nitrogen would soon be back in the soil for another season's use.

There may be sharp dissent from the premise I have just expressed, but in all honesty, I am somewhat chagrined at our almost total lack of knowledge in this field of direct fertilization. Think what it would mean if we could cut the time of maturity of ordinary sawtimber or of fine, mature veneer and cabinet woods by a half, or even a third.

There is a wide open field of opportunity, through studies in genetics and fertilization for the development of improved nut species; for the production of sugar maple producing sap of greater sugar content; for the development of cabinet woods with a higher ratio of choice heartwood; for the development of handle stock with a minimum of off-color heartwood.

Is there a possibility that desirable pattern of grain in cabinet woods can be mechanically or chemically induced in the seedling tree?

Is there economic justification to produce grafted planting stock from unusually desirable specimens of more valuable timber trees?

These, and countless other questions, I am sure, have crossed the minds of all of us who are interested in forest research.

I do not believe we should put our heads in the clouds, or follow our own mental butterflies in building a future program of forest research. Rather, we must keep ourselves attuned to the changing tempo of agriculture and industry.

Industry creates the great dollar market for forest products. It is both reasonable and essential that those who direct forest research programs in the future should strive to develop a mutuality of interest and endeavor in this field with the industries which are to provide the market.

The great economic losses which have resulted from the inroads of disease and insects in the timber stands of the state and nation have placed a stamp of high priority on this phase of forest research. But here is a field which demands the service of various research specialists - the plant pathologist, the entomologist, the plant ecologist, the agronomist and the chemist. It is basic that special phases of the broad program should be assigned without hesitancy to those other agencies or individuals who are best qualified in that particular field. That principle has become the guiding precept of the great industrial research organizations in the world today. Few ideas brought to ultimate consummation in industry today are the work of any one man; most of them embrace the knowledge and experience of many men. So also it must be in the field of forest research if desirable goals are to be met.

To those of you concerned with or interested in forest research, particularly as it applies to Ohio, I suggest again that a sound course for such a program lies in developing the answers to these four questions:

- (1) What do we now have?
- (2) How can we best use what we now have?
- (3) What do we want for the future?
- (4) How can we best develop our timber crop to meet the requirements of changing markets?

Imagination and common sense will be as important as technical or scientific skill in the final answers.